

## REMARKS

Applicants request favorable reconsideration of this application in view of the foregoing amendments and the following remarks. Of claims 1-19 that were pending in the application, claims 1-3, 7, 8, 10-13, 17, and 18 were rejected in the Office Action. Applicants greatly appreciate the positive indication of allowable subject matter in each of claims 4-6, 9, 14-16, and 19. In response to this positive indication, claims 4, 5 (*i.e.*, the claim from which claim 6 depends), 9, 14, 15 (*i.e.*, the claim from which claim 16 depends), and 19 have been amended to be in independent claim format and to address matters of form. Therefore, claims 4-6, 9, 14-16, and 19 should be in condition for allowance. In total, Applicants have amended all of claims 1-19, which are respectfully presented for further consideration.

### **1. Provisional Double Patenting Rejection**

The Examiner provisionally rejected all of claims 1-19 “under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of copending [U.S. Patent] Application No. 10/830,054.” Applicants respectfully acknowledge this provisional rejection (and the same provisional rejection made in copending U.S. Patent Application No. 10/830,054). However, until the claims of either the current application or copending U.S. Patent Application No. 10/830,054 are allowed, no action is required on Applicants’ part.

### **2. Rejections of Claims 1-3, 7, 8, 10-13, 17, and 18**

Under 35 U.S.C. § 103(a), the Examiner rejected: (a) claims 1-3, 7, 10-13, and 17 as allegedly being obvious when considering U.S. Patent No. 5,862,507 (“Wu”) in view of U.S. Patent No. 6,584,834 (“Lehner”); and (b) claims 8 and 18 as allegedly being obvious when considering Wu in view of Lehner and further in view of U.S. Patent No. 6,907,341 (“Aono”).

Preliminarily, Applicants respectfully submit that Aono is not prior art. Aono issued on June 14, 2005 based on an application filed, in the United States, on October 2, 2003. Under 35 U.S.C. § 102(e), for a patent, which issued after an application was filed, to be prior art against that application, the patent must have been “granted on an application for patent by another filed *in the United States before the invention by the applicant for patent*[.]” In this case, Applicants’ invention was recited in the priority document JP 2003-120325, which was filed on April 24, 2003, *i.e.*, almost six months prior to Aono’s U.S. filing date. Accordingly, Aono was not “filed in the United States before” the Applicants invented the

subject matter of the instant application and, therefore, Aono is not § 102(e) prior art. To enable the Examiner to confirm that the priority document supports the limitation recited in claims 8 and 18, a certified English translation of the priority document will be filed in the coming days.

As Aono is not prior art, the rejection of claims 8 and 18 under § 103(a) is moot. Moreover, as the rejection of claims 8 and 18 is moot, these claims have been amended to be in independent claim format, thereby enabling them to be allowed. In light of the foregoing, the prior art rejections will be addressed, and respectfully traversed, with respect to claims 1-3, 7, 10-13, and 17.

As amended, claim 1 (*i.e.*, the claim from which claims 2, 3 and 7 depend) recites a misfire detecting apparatus for an internal combustion engine. This apparatus includes, among other possible things (*italic emphasis added*):

- an operating condition detector that is configured to detect engine operating conditions inclusive of an engine rotation speed; and
- a calculating section that is configured to:

- calculate diagnosis data indicating a variation of said engine rotation speed;

- calculate a threshold based on said engine operating conditions;
  - judge whether a misfire occurred, based on a comparison between the calculated diagnosis data and the calculated threshold;

- calculate data indicating an average correlation between said calculated diagnosis data and said calculated threshold;

- judge whether said calculated diagnosis data becomes larger on average on the basis of said calculated threshold based on the data indicating an average correlation between said calculated diagnosis data and said calculated threshold;

- calculate a correction value for correcting said calculated threshold based on whether said calculated diagnosis data becomes larger on average on the basis of said calculated threshold;*
  - and*

- correct said calculated threshold said correction value.*

Similarly, as amended, claim 10 recites a misfire detecting apparatus for an internal combustion engine. This apparatus includes, among other possible things (*italic emphasis added*):

- means for detecting engine operating conditions inclusive of an engine rotation speed;

- means for calculating diagnosis data indicating a variation of said engine rotation speed;

- means for calculating a threshold based on said engine operating conditions;

- means for judging whether a misfire occurred, based on the comparison between said calculated diagnosis data and said calculated threshold;

means for calculating data indicating an average correlation between said calculated diagnosis data and said calculated threshold;

means for judging whether said calculated diagnosis data becomes larger on average on the basis of said calculated threshold based on said data indicating the average correlation between said calculated diagnosis data and said calculated threshold;

*means for calculating a correction value for said calculated threshold based on whether said calculated diagnosis data becomes larger on average on the basis of said calculated threshold; and*

*means for correcting said threshold with said correction value.*

Finally, claim 11 (*i.e.*, the claim from which claims 12, 13, and 17 depend) recites a misfire detecting method for an internal combustion engine. This method includes, among other possible steps (*italic emphasis added*):

detecting engine operating conditions inclusive of an engine rotation speed;

calculating diagnosis data indicating a variation of said engine rotation speed;

calculating a threshold based on said engine operating conditions;

judging whether a misfire occurred, based on a comparison between said calculated diagnosis data and said calculated threshold;

calculating data indicating an average correlation between said calculated diagnosis data and said calculated threshold;

judging whether said calculated diagnosis data becomes larger on average on the basis of said calculated threshold based on said data indicating the average correlation between said calculated diagnosis data and said calculated threshold;

*calculating a correction value for said calculated threshold based on whether said calculated diagnosis becomes larger on average on the basis of said calculated threshold; and*

*correcting said calculated threshold with said correction value.*

As hereafter explained in detail, neither Wu nor Lehner (standing alone or combined) teaches or suggests the apparatuses recited in claims 1 and 10 or the method recited in claim 11.

As admitted by the Examiner, Wu “fails to teach a calculation section that ‘calculates a correction value for correcting said threshold based on data indicating an average correlation between said diagnosis data and said threshold, to correct said threshold with said correction value.’” To cure this deficiency, the Examiner turns to Lehner. The Examiner’s reliance on Lehner is, however, misplaced for at least two reasons.

First, contrary to the Examiner’s assertion, Lehner does not apply a corrective coefficient to the threshold. Rather, as set forth in the passage cited by the Examiner (col. 4, line 51 – col. 5, line 6), the corrective coefficient is applied to the rough-running values “in lieu of a change of the threshold value.” Second, although Lehner teaches adjusting a threshold value, Lehner fails to teach a threshold value that is corrected with a corrective value that is calculated “based on whether said calculated diagnosis becomes larger on

average on the basis of said calculated threshold.” Rather, Lehner teaches that the threshold may be adjusted to correspond directly to deviations in the ignition angle ZW. *See* Lehner at col. 4, lines 31-50.

In contrast to Wu and Lehner, the instant application teaches, for example, in steps S5, S14, and S141-143 that, during each ignition, the threshold SL is calculated using a coefficient K (step S5). *See* p. 4, lines 16-22, p. 6, line 3 – p. 8, line 6; Figs. 2 and 3. The coefficient K, however, is corrected during each ignition (step S14, S141-143) such that the threshold SL is corrected. In other words, as above-italicized the calculated threshold is corrected with said correction value K.

As neither Wu nor Lehner teaches or suggest the above-italicized limitation of claims 1, 10, and 11, the references standing alone or combined can not be used to rejected claims 1, 10, and 11, or any claim dependent thereon, under 35 U.S.C. § 103(a). Moreover, as claims 2, 3, and 7 depend from claim 1 and as claims 12, 13, and 17 depend from claim 11, each of these dependent claims is also allowable over Wu and Lehner, without regard to the other patentable limitations recited therein. Accordingly, a withdrawal of the § 103(a) rejection of claims 1-3, 7, 10-13, and 17 is both warranted and respectfully requested.

### CONCLUSION

For the aforementioned reasons, claims 1-19 are now in condition for allowance. A Notice of Allowance at an early date is respectfully requested. The Examiner is invited to contact the undersigned if such communication would expedite the prosecution of the application.

Respectfully submitted,

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THE COMMISSIONER IS HEREBY AUTHORIZED TO CHARGE ANY ADDITIONAL FEES WHICH MAY BE REQUIRED REGARDING THIS APPLICATION UNDER 37 C.F.R. §§ 1.16-1.17, OR CREDIT ANY OVERPAYMENT, TO DEPOSIT ACCOUNT NO. 19-0741. SHOULD NO PROPER PAYMENT BE ENCLOSED HEREWITH, AS BY A CHECK BEING IN THE WRONG AMOUNT, UNSIGNED, POST-DATED, OTHERWISE IMPROPER OR INFORMAL OR EVEN ENTIRELY MISSING, THE COMMISSIONER IS AUTHORIZED TO CHARGE THE UNPAID AMOUNT TO DEPOSIT ACCOUNT NO. 19-0741. IF ANY EXTENSIONS OF TIME ARE NEEDED FOR TIMELY ACCEPTANCE OF PAPERS SUBMITTED HEREWITH, APPLICANT HEREBY PETITIONS FOR SUCH EXTENSION UNDER 37 C.F.R. § 1.136 AND AUTHORIZES PAYMENT OF ANY SUCH EXTENSIONS FEES TO DEPOSIT ACCOUNT NO. 19-0741.

**AMENDMENTS TO THE DRAWINGS**

Figure 1 has been amended to remove reference numeral “122”, which was not discussed in the specification.